



Saving Our Scrub

*A newsletter dedicated to sharing information
about the Florida scrub ecosystem*



Volume 1, Number 1 August 2000

Welcome To The Inaugural Edition!

Welcome to the first edition of *Saving Our Scrub*, a newsletter dedicated to the sharing of information about Florida scrub habitat. First, I'd like to thank Frank Ogles, with Florida Department of Environmental Protection, who provided the name for this publication. I promise to make this newsletter what is wanted and needed by its readers, who consist mostly of wildlife and plant biologists, land management professionals, and personnel associated with environmentally-based NGOs. As time passes, I hope to add many other groups to this list, but I'll need your help to do so. If you know of an individual or group who would like to receive this newsletter, please provide me with an email address (if available) or a mailing address. I'll start by producing a quarterly newsletter, but if I find that I am getting a large number of submissions and can fill another newsletter before the next "deadline," I'll go ahead and produce one. Conversely, if I don't get many submissions, then I'll spread out the time between editions.

As with all newsletters, the editor needs the assistance of the readers of the publication to make it a success. If you don't think you're the greatest writer in the world and are reluctant to submit something to me because of it, don't worry. I'll be glad to function as an editor and help you with your submission. Please look over the list of "needs" (see below) and consider putting something together to help me.

Let's make this newsletter a tool that works for everyone to help us conserve our remaining scrub heritage!

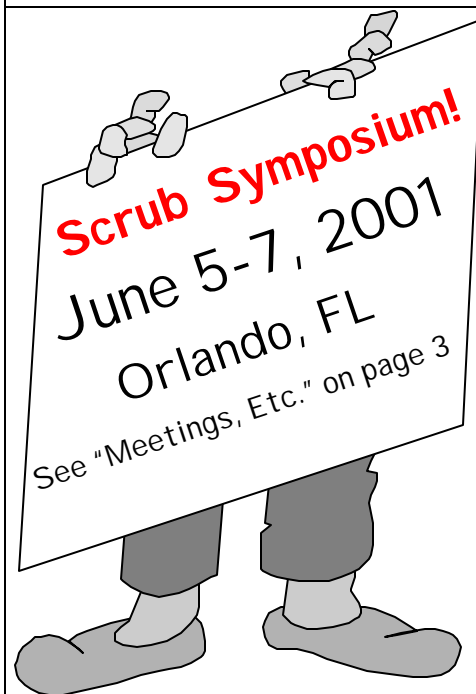
Dawn Zattau (dawn_zattau@fws.gov)

Newsletter Needs:

- Articles from folks who are on the ground performing restoration and management tasks vital to the ecosystem. These articles should be about management and restoration techniques AND how you have dealt with the public when performing these tasks. Without your successes and/or failures being reported, others may waste valuable time learning what you already know.
- Articles on dispersal of scrub wildlife and how to manage to encourage dispersal among sites
- Articles on the biology of all scrub endemics
- Information about seminars, meetings, workshops, and field trips relating to scrub or scrub management
- Notes about unusual observations in the scrub
- Information about funding opportunities
- Submissions regarding conservation techniques other than land purchase, such as inheritance tax changes, conservation easements, etc.
- Information on pending state legislation
- Articles on successful partnerships
- Plant identification tips
- Citations for new journal articles or grey literature about scrub
- Information on anything else about scrub that you think the readers would find interesting

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Mark your calendars and start thinking about what you would like to contribute to the symposium. This will be the best opportunity we will have to share our knowledge among our peers. The call for papers will be coming your way soon!

Partners for Fish and Wildlife

Jay B. Herrington, U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (Service) has established a "Partners for Fish and Wildlife" program that helps restore and protect wetlands and other wildlife habitat on privately-owned land. Since 1987, more than 21,500 private landowners nationwide have restored and protected over 464,000 acres of wetlands, 447,000 acres of upland wildlife habitat, and 2,700 miles of riparian habitat as part of this program.

Technical and financial assistance are provided by the Service in cooperation with other federal and state agencies, conservation organizations, and landowners. The Service will pay up to 100% of project costs up to a maximum of \$10,000 per landowner if a proposed project meets certain criteria.

Some examples of projects funded by the Partners for Fish and Wildlife program are:

- ' restoring, improving, or protecting habitat for threatened, endangered, or rare species;
- ' fencing and revegetation efforts along riparian areas and floodplains;
- ' restoration of longleaf pine habitats;
- ' planting of hardwood trees beneficial to wildlife on previously altered sites;
- ' plugging ditches and planting bottomland hardwood trees in previously drained wetlands;
- ' stream restoration on previously altered or eroded streams.

Farmers, ranchers, city dwellers, and other landowners are welcome to participate in the Partners program. All that is asked of the landowner is to maintain the restored area for a **minimum of ten years**. Landowners keep all rights to their land, including the control of hunting, fishing, and trespassing.

For further information on the Partners for Fish and Wildlife program in Florida, please contact Jay Herrington at the address below.

Jay Herrington, U.S. Fish and Wildlife Service; 6620 Southpoint Dr., S., Ste. 310; Jacksonville, Florida 32216-0912; (904) 232-2580, ext. 120; jay_herrington@fws.gov



Saving Our Scrub is published regularly to provide a forum for sharing information about the imperiled Florida scrub ecosystem. The newsletter is distributed free to anyone interested in obtaining a copy. Comments, suggestions, and article submissions should be directed to the editor. The editor and the U.S. Fish and Wildlife Service assume no responsibility for information contained herein, or for injury or damage resulting from use of such information. Information herein will be used at the reader's own discretion and risk. Views and opinions expressed herein are those of the author or source of material and do not necessarily reflect the opinions, views, or endorsements of the U.S. Fish and Wildlife Service.

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Deadline for next issue:
October 31, 2000

Website:
www.fws.gov/r4jafl

Grant Opportunities

For detailed information on all of the following grant opportunities, see the Unified Call for Proposals on National Fish and Wildlife Foundation's web site (www.nfwf.org).

NATIVE PLANT CONSERVATION INITIATIVE supports on-the-ground conservation projects that protect, enhance, and/or restore native plant communities on public and private lands. Deadline for application is August 15, 2000. Contact Gary Kania or Beth DeCarolus at NFWF (202-857-0166 or kania@nfwf.org / decarolis@nfwf.org).

RESTORE OUR SOUTHERN RIVERS supports on-the-ground projects to restore and enhance riparian and riverine habitats in the southeastern states, including Florida. The deadline for applications is August 15, 2000. Contact Peter Stangel at NFWF (404-679-7099 or stangel@nfwf.org).

SEEKING COMMON GROUND is an effort undertaken by federal and state government agencies and private conservation organizations to achieve the common goal of maintaining and improving the health of America's rangelands for the benefit of wildlife and habitat. The deadline for applications is August 15, 2000. Contact Gary Kania or Brian Ocepek at NFWF (202-857-0166 or kania@nfwf.org / ocepek@nfwf.org).

PULLING TOGETHER INITIATIVE provides a means for federal partners to be full partners in developing long-term weed management strategies within the scope of an integrated pest management strategy. The deadline for applications is November 7, 2000. Contact Gary Kania or Gabriela Chavarria at NFWF (202-857-0166 or kania@nfwf.org / chavarria@nfwf.org).



Federal Threatened and Endangered Species Of The Lake Wales Ridge

David L. Martin, U.S. Fish and Wildlife Service

The Lake Wales Ridge is home to one of the densest concentrations of federally listed plants in the United States, rivaled perhaps by some mid-elevation areas in Hawaii and a few small, specialized habitats, like the Miami pine rocklands. When listing of the Ridge's plants began in the mid-1980s, the remaining scrub and high pineland habitats were disappearing rapidly, and many of the best remnants were in fragmented ownerships, such as subdivisions; these types of areas were (and continue to be) very difficult to purchase even if the money could be found—and money was only beginning to seem available, as the state's Conservation and Recreation Lands program became established.

Because native vegetation was disappearing so rapidly, the Fish and Wildlife Service listed a number of plant species that were still abundant, but had severely restricted ranges, as shown by intensive plant surveys conducted by Ann Johnson, Steve Christman, and Jack Stout. The Service published its first recovery plan for the Ridge plants in 1989, updated it in 1996, and most of the listed plant species were covered by the Multi Species Recovery Plan for south Florida issued in 1999. From the start, recovery planning emphasized land acquisition, although it has since broadened to include land management problems, especially restoration by suitable fire regimes. The response of Lake Wales Ridge scrub and longleaf pinelands to fire was not well understood in the mid-1980s, a situation that has improved enormously as land managers experiment with fire and monitor the results. Archbold Biological Station led the way as they changed a longstanding policy of fire suppression, but it's also

very important that recently-acquired state and private conservation lands are under active management, and that managers are able to develop a common body of experience.

Appreciation of the importance of fire for maintaining sandy openings in the vegetation is part of what prompts the Service's plans to propose to list the Highlands tiger beetle (*Cicindela highlandensis*). Tiger beetles are usually conspicuous and handsome (to the point of being sought by collectors, much like

butterflies or orchids) and their habitats—often open, sandy places—tend to be vulnerable to human activities, so much so that two beach-dwelling tiger beetles of the northeastern United States are already listed and a coastal Californian species is proposed. The Highlands tiger beetle is now known

to range from near Lake Marion in Polk County (which is very close to the Poinciana area of Osceola County) south nearly to Lake June in Winter, south of Sebring. Intensive surveys by C. Barry Knisley of Randolph-Macon College and James M. Hill have shown that populations of this beetle are small and scattered, and that the larvae depend on open sandy sites with partial shade, where they make their burrows, and make a living by snatching prey that pass too near. While it appears that enough habitat may be set aside for this beetle, especially if existing CARL projects succeed, populations of this beetle will probably need special attention to assure that they persist until land managers cure the fire deficit. A further complication is that the beetle larvae and adults seem to require some shade for protection against the hottest summer weather.

A further wrinkle on the possible listing of the Highlands tiger beetle is



Highlands Tiger Beetle

Photo by Paul M. Choate, University of Florida

Meetings, Etc.

AMERICAN ORNITHOLOGISTS' UNION August 14-19, 2000, St. Johns, Newfoundland. "Living on the Edge-Birds 2000." See pica.wru.umt.edu/AOU/AOU.html.

SOCIETY FOR ECOLOGICAL RESTORATION September 4-7, 2000, Liverpool, UK. "Reflections on the past-directions for the future." See www.ser.org.

NATURAL AREAS ASSOCIATION MEETING October 16-20, 2000, St. Louis, MO. "Connecting People and Natural Diversity in the 21st Century." See www.natareas.org/frame.htm.

FLORIDA CHAPTER OF THE WILDLIFE SOCIETY October 18-19, 2000, Lake Placid, FL. Contact Carrie Sekerak (352-669-3153, csekerak@fs.fed.us).

ASSOCIATION OF SOUTHEASTERN BIOLOGISTS April 4-7, 2001, New Orleans, LA. See www1.appstate.edu/dept/biology/asb/index.htm.

FLORIDA NATIVE PLANT SOCIETY May 10-13, 2001, Tarpon Springs, FL. See www.fnps.org.

2001 SCRUB SYMPOSIUM June 5-7, 2001, Orlando, FL, Radisson Plaza Hotel. Call for papers coming soon! See "Service Update" on page 7 for more information. Contact Dawn Zattau (904-232-2580, ext. 107; dawn_zattau@fws.gov).

SOCIETY FOR CONSERVATION BIOLOGY July 30-August 4 2001, Hilo, HI. "Ecological Lessons From Islands." See www.hear.org/scb2001.

ECOLOGICAL SOCIETY OF AMERICA August 5-9, 2001, Madison, WI. "Keeping All the Parts: Sustaining and Restoring Complex Ecosystems." See esa.sdsc.edu/annual.htm.



MISC. TRAINING in a wide variety of topics, including (but not limited to) conservation biology, permitting, and partnership building is available at U.S. Fish and Wildlife Service's National Conservation Training Center, based in Shepardstown, WV. For additional information see their web site at www.nctc.fws.gov.

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Research on Scrub Plants at Archbold Biological Station

Eric S. Menges, Archbold Biological Station

For a number of years, our lab has been conducting basic and applied research on the population biology of Florida scrub plants. The basic research involves such things as whether populations vary much in size, whether plants need pollinators to set fruit, and whether seeds tend to germinate mainly after fires. The basic research segues into questions that we hope will be useful in conservation and management. What is the fire return time that is best for scrub plants? (This is often quite frequent). Are there detrimental effects of firelanes that extend into the scrub vegetation? (No obvious effects if there have not been soil disturbances). Is there enough genetic variation in natural populations for them to produce offspring? (For most species, yes, but no for *Ziziphus celata*).

For the species that we have been studying the longest (see Table below), we have been fortunate enough to observe some rare events that might not show up in a short-term study. These include exceptional years for

seedling recruitment (often years with wet winters, often years closely following fires), local extinctions of aboveground populations (occurring between 20 and 30 years postfire for *Eryngium cuneifolium*), and high mortality in smaller individuals (for south Florida slash pine, after extended flooding).

Our studies show that fire is often a very good thing for scrub plants, promoting seedling recruitment from dormant seeds in the seed bank for many species, increased flowering followed by seed production and germination for others, and resilient re-sprouting for still other plants. Of course, there are a lot of questions remaining about the details of fire. These include how often to burn, whether extremely hot fires have different effects, whether unburned patches benefit certain species, and whether there are ways to either mimic fire or pretreat the landscape before fire that result in the same benefits to scrub plants. With all the negative publicity and logistical constraints to burning, we need to know whether alternatives produce the

same positive benefits of fire.

We have been collaborating with other scientists to broaden and link our studies of the demography of individual populations. We are working with several geneticists to examine the links between genetic variation, breeding systems, and the viability of populations of scrub plants. We are examining larger scale patterns of population change at the scale of patches and landscapes, using GIS and GPS technology to help us keep track of data. Approaches new to Florida scrub, such as plant physiology and ecosystem ecology, will also help us to understand the mechanisms behind the population patterns we see in the field.

Our lab is always eager to work with natural resource managers to answer practical questions, and we are always excited to talk with anyone about our findings and ongoing research. We also seek interested students for our intern program. Please contact Eric Menges at emenges@archbold-station.org.

Plant Demography Research at Archbold Biological Station

* Individual plants not followed
** Selected list. We also appreciate funding from the National Science Foundation.

DOF=Florida Division of Forestry
TNC=The Nature Conservancy
FFWCC=Florida Fish and Wildlife Conservation Commission
USFWS=U.S. Fish and Wildlife Service
DPI=Division of Plant Industry
LSU=Louisiana State University
TSU=Truman State University
BTG=Bok Tower Gardens

Species	Number of sites	Yrs.	Number Plants	Collaborators and/or Funding**	Specific Topics
<i>Asimina ebouletii</i>	2	1993-	237		Spatial variation in fruiting
<i>Ceanothus americanus</i>	3	1997	647	Univ. W. Florida	Seedling dynamics
<i>Clusia fragrans</i>	1	1992-	132	DOF	Plant succession
<i>Chrysopsis floridana</i>	3	1999-	717	Univ. S. Florida	Comparative life history
<i>Crocanthia americana</i>	2	1998	187	TNC, FFWCC	Herbivory
<i>Dimerandra caryocarpus</i>	2	1994-	553	USFWS	Microhabitat specialization
<i>Dichromelia frutescens</i>	3	1948	4292	DPI	Extinction modeling
<i>Eriogonum floridanum</i>	6	1990-	1182	USFWS	Fire regimes for pop'n viability
<i>Eryngium cuneifolium</i>	14	1948-	4214	FFWCC, DPI	Subterranean seedlings
<i>Hypericum cumalachense</i>	22	1994-	3689	DOF	Population viability
<i>H. adpressum</i>	1	1998	224	Univ. Florida	Causes of retrocks
<i>Lacinea carnea</i>	1	1999-	573	LSU	Comparative demography
<i>L. dieckmannii</i>	1	1999	597	LSU	Comparative demography
<i>Liatris omigensis</i>	2	1998-	390	DOF	Herbivory and demography
<i>Pinus elliptica v. densa</i>	5	1997-	863	Cornell Univ.	Hydrology and demography
<i>Podagala densa</i>	2	1996-	823	DOF	Postfire demography
<i>Polypogonum bartramia</i>	12	1996-	1763	LSU	Metapopulation dynamics
<i>P. robusta</i>	2	1999	450	LSU	Comparative demography
<i>Proserpinaca aculeata</i>	2	1998-	~160	DOF, USFWS	Breeding systems
<i>Solidago chapmanii</i>	23	1991		Cornell Univ.	Postfire demography
<i>Winnia carteri</i>	48	1948-*	TNC, FFWCC, LSU	Seed bank dynamics
<i>Ziziphus celata</i>	5	1996	~250	BTG, USFWS	Reintroduction experiments

Developing Biological Criteria for the Recovery of Florida Scrub-Jay Populations on Public Lands in Brevard and Indian River Counties

Patterns of Fire History, Habitat Fragmentation, Habitat Use, Demography, and Dispersal

David R. Breininger, Dynamac Corporation (DYN-2, Dynamac, Kennedy Space Center, FL 32899; david.breininger@ksc.nasa.gov)

A demographic and dispersal study of colorbanded Florida scrub-jays (*Aphelocoma coerulescens*) began on the mainland of Brevard County in December 1996 and has since extended into north Indian River County. The study, funded by the U.S. Fish and Wildlife Service, is focused on quantifying population dynamics on public lands as they are being acquired for conservation in order to make spatially explicit recommendations for land acquisition, habitat restoration and management to facilitate the recovery of these populations. Broader objectives are to: a) test assumptions of habitat mapping and reserve design applications, b) investigate habitat requirements needed for population viability, c) investigate whether the rates of demographic success in restored areas are sufficient for recovery, d) investigate the rates that jays in urbanizing landscapes immigrate into restored landscapes, and e) test ecological theories of population dynamics that might be useful in recovery planning. Approximately 140 Florida scrub-jay families have been under investigation. Nearly all Florida scrub-jays in existing conservation areas are under investigation along with many proposed reserves and several urban areas.

The population declined steeply since extensive surveys of jays and their habitat were conducted in 1993 and 1994 to support statewide surveys and the Brevard County Scrub Conservation and Development Plan. The metapopulation in South Brevard County and North Indian River County has the potential to exceed 200 pairs in relatively large and unfragmented landscapes and therefore represents the fourth largest metapopulation statewide. Excluding the Carson Platt addition to the St. Sebastian River State Buffer Reserve, study sites in South Brevard County and North Indian River County had 150 pairs during 1993 but declined to 64 pairs in 1999, representing an average population decline of 13.5% per year.

Although the decline was magnified slightly by a presumed rare epidemic in 1998, steep population declines were predicted based on poor habitat quality that characterizes nearly all sites because of the reduction in natural fire regimes and fragmentation of habitats associated with urbanization. Most population declines occurred in areas without extensive habitat destruction. Not all sites have declined steeply but studies of colorbanded birds reveal that mortality rates exceed reproductive success and that population declines have been buffered by immigration in nearly all areas. The population of Carson Platt was not known to be significant until recently when initial surveys suggest the population ranges from 25-40 families in one contiguous landscape, which probably has the greatest habitat quality of all Atlantic coast sites.

Aerial photographs beginning in 1943 show that many fires were only common in every landscape prior to the 1960s and that dramatic habitat changes occurred in the 1960s and 1970s. In some areas with slow rates of urbanization, changes occurred later than the 1970s once ranching and the use of prescribed fires declined. Most biologists, natural resource managers, politicians, and concerned citizens started their careers and formed opinions of their natural surroundings after the reduction in fire frequencies. In areas that have not been urbanized, the large, open savannas of scrub, flatwoods, and marshes that dominated the central Atlantic coast have been replaced by small patches scrub, flatwoods, and marshes surrounded by forests. Tree densities of several hardwoods and pine species have greatly increased in many areas while natural open sandy areas have declined. It has long been established that these habitat changes have negative impacts on Florida scrub-jay habitat suitability and demographic success, however, these patterns are not always accepted outside the scientific

community. For example, regulatory policies consider that recently forested wetlands have greater value than open marshes. Awareness of the magnitude of landcover changes and population declines is often poor and demonstration of these changes is best justified by data.

There is much uncertainty about the exact relationships between scrub-jay demographic success and pine cover, distance to forest, shrub height, and the arrangement of scrub oaks and open sandy areas. Dozens of restoration and management actions are being conducted each year, but it is clear that several fires will not return many sites to optimal conditions or conditions characteristic of historical photography. Some sites might be impossible to recover except under long periods of management using expensive implementing practices. Therefore, greater quantification of habitat relationships is needed to measure management success and make the best use of available resources. There is accumulating evidence that relationships among habitat variables are compensatory or that habitat and demography relationships vary slightly among individual landscapes, possibly because of differences in food or predators.

Density and demography data are not always correlated; population sinks can have relatively stable densities because of immigration so that density data alone is insufficient. Generally, either the low production of juveniles or the low survival of juveniles is responsible for the population declines in various areas, although breeder survival is also responsible for population declines in some areas. Therefore, one can not rely on a few simple measurements, such as density and juvenile production, to determine whether an area is of sufficient quality to sustain a population. Logistics, roads, forests, urban areas, variable fire behavior, and uncertainties in vegetation

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Developing Biological Criteria...

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response make it impossible to return every territory to optimal habitat conditions in conservation reserves so that there must be enough territories with high demographic success to sustain populations. Despite numerous habitat management efforts, most areas do not have nearly enough habitat with sufficient quality to sustain populations. Population declines in reserves are often buffered by immigration until there are few available immigrants.

Environmental consultants regularly challenge broad definitions of habitat. In Brevard County, Florida scrub-jays are often found in areas that are not excessively drained and have many pine trees, few openings, and tall shrubs. Long-term studies at Kennedy Space Center are demonstrating that Florida scrub-jay populations can persist in areas with little soil mapped as excessively-drained. Territories in these areas have patches of scrub oaks in a matrix of saw palmetto, shiny lyonia, gall berry, and swale marshes. Studies show that jays from optimal oak scrub will disperse into flatwoods that have patches of scrub oaks and that their probabilities of success in these areas can be almost as great as jays living in oak scrub, providing fires burn frequently and as mosaics. Jays living in optimal oak scrub also face risks of decreasing habitat suitability because of fire patterns. Related studies on Kennedy Space Center/Merritt Island National Wildlife Refuge show that scrub-jays nest and sometimes forage in habitat other than oak scrub. Telemetry studies show that newly fledged young often spend a few weeks in dense palmetto habitats even where optimal oak scrub is nearby.

Many Florida scrub-jays on the Atlantic Coast mainland reside within habitat that is not mapped as excessively-drained, and these areas are probably important for the recovery of the population because the most excessively drained areas have been urbanized. Occasionally, existing Florida scrub-jays are not found residing in proposed reserves that were developed from landcover maps, but rather are residing in flatwoods adjacent to proposed

reserves. This occurs for several reasons. One reason is that landcover mapping applications usually distinguish only the largest patches of scrub oaks. Landcover applications do not need to explicitly map each patch of scrub oak but they need to distinguish flatwoods polygons that contain scrub oaks from polygons that do not. A second reason for the occupancy of flatwoods, but not oak scrub, is that oak scrub burns poorly and often becomes dominated by sand pines or tall oaks when fires are suppressed while the adjacent flatwoods remain more open because of their susceptibility to wildfires. In these areas, unoccupied oak scrub is probably most important for recovery once restoration is completed but this hypothesis needs testing since regulatory jurisdiction focuses on occupied habitat.

Florida scrub-jays are also abundant in many fragmented areas where many independent studies show that their viability is low compared to larger contiguous populations. Many of the potential conservation reserves have scrub-jay populations that are sparse or below carrying capacity. Even extensive management operations that follow acquisition leave much habitat of poor quality so that populations in these areas often continue to decline if they are relatively isolated. Isolation can be a function of distance and the matrix of surrounding habitat. Some large, restored areas adjacent to areas with an abundance of potential breeders remain sparsely occupied if separated by even relatively narrow forests. Because restoration might take many years for logistic and ecological reasons, jays living in areas outside potential reserves can be an important source of potential breeders. Studies have shown that many first year birds living in these areas will move to new fragments to breed and that experienced breeders will also move if necessary to find mates. However, most long distance movements involve females, and males move rarely among fragments. Therefore, the rate of immigration of males might often be insufficient to offset declines associated with poor habitat quality of areas being restored depending on the landscape

context of restored areas. Although territories have been unoccupied for many years following restoration, vacant territories have been rapidly filled following years of high reproductive success attributed to environmental variation so that long-term data is needed with the recognition that stochastic processes influence individual outcomes.

In summary, demography and dispersal data of colorbanded jays not only provides predictions of future population trends before the fates of populations are sealed, but the data is also critical for adaptive management in some populations because of the complexity and specifics of restoration opportunities that remain. It may be impossible to sort all of the sources of variation in population dynamics so that colorbanding might be essential for recovery of many fragmented populations that occur in areas where restoration to optimal conditions is uncertain or difficult. Related Ecological Program studies, which began in 1988 on Kennedy Space Center/Merritt Island National Wildlife Refuge, also indicate that the length of delayed breeding, breeder survival, sex differences in survival, fledgling production, fledgling survival, habitat responses to restoration, helper effects on demographic success can all vary among landscapes. These differences might occur because of larger ecosystem processes related to habitat structure, landscape arrangements, and predator abundances. For example, data are accumulating that Cooper's hawks are a significant source of mortality of young and adults in many Atlantic Coast landscapes. Snake predation appears responsible for many years of almost no reproductive success in some landscapes. Although the attainment of suitable habitat conditions involves variability and uncertainty, the direction for management is clear. Nearly all areas need frequent fire and often mechanical treatments to reduce tree densities and provide the ability for controlled burning.

Service Update...

Dawn Zattau

With the newsletter finally becoming reality, it is time to move on to other equally needed tasks. At the time of this printing, the Service is extremely close to establishing a **listserver** devoted to scrub information. It will be a place to share management successes, scrub news of crucial importance, and a forum in which assistance on scrub management, research, etc. can be answered quickly. I will keep you up-to-date on the listserver's status either via e-mail or through the Service's web site (www.fws.gov/r4jaffl). Mark it as one of your "favorites" and visit it often!

The Service is also working on establishing a **web site devoted to the scrub ecosystem**. When it is established, it will be a place you can look to find items like links to other scrub sites, a scrub bibliography, a contact list for existing pertinent newsletters, details of scrub management and ecology, and copies of the tables of contents of selected journals. **I am seeking volunteers to assist with developing a site map for this important website; please step forward!!!**

The Service is sponsoring a 2 1/2-day **scrub symposium** June 5-7, 2001 at the Radisson Plaza Hotel in Orlando, Florida. This symposium will be THE place to be updated on the latest scrub management techniques, ongoing research on scrub species, and whatever topics the call for papers generates (which will be coming your way soon). **There will be no registration fee for this symposium, so mark your calendars now and plan to be there!** I am seeking volunteers to serve in varying capacities to make this meeting a complete success. Please contact me if you have experience in putting together this type of meeting. You will be kept informed of the symposium's progress through e-mail or the Service's web site.

Last, the **Florida scrub-jay recovery team** is working hard to get the first revision to the recovery plan written. I am in the process of compiling a mailing list of persons interested in receiving a copy of the **technical/agency draft**. Please contact me if you are interested in receiving a copy when it is ready, and I'll be sure to send one your way.

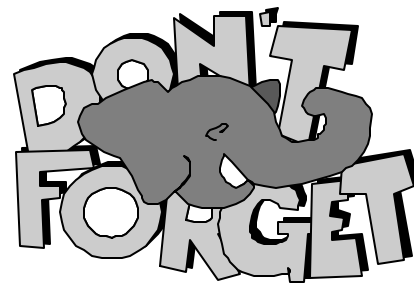
Federal Threatened and Endangered...

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that Fish and Wildlife Service now proposes to determine critical habitat when species are proposed for listing. Critical habitat affects only actions of Federal agencies or permits issued by Federal agencies. In addition to the Endangered Species Act's requirement that such Federal actions or permits not "jeopardize the continued existence" of the species, there is a further requirement that Federal actions or permits not "adversely modify critical habitat." In practice, "adversely modify" is defined by regulation to be nearly the same thing as "jeopardize," so designation of critical habitat provides little, if any, additional protection to a species. Critical habitat does, however, serve to notify Federal agencies and other interested parties of what areas are important for the conservation of the species.

Tiger beetles are not the only species that need open sand. Many, if not most, of the plants endemic to the Lake Wales Ridge also inhabit sunny, open sites. One of the most ubiquitous is papery whitlow-wort, *Paronychia chartacea* ssp. *chartacea* (a second subspecies, ssp. *minima*, is restricted to the Florida panhandle). Thanks to large-scale land purchases, this species appears to qualify for delisting, which, following the requirements of the Endangered Species Act, would be followed by a mandatory five years of monitoring to ensure that further legal protection is unnecessary. Similarly, a wireweed (*Polygonella basiramia*) and a closely-related species

called sandlace (*Polygonella myriophylla*) inhabit sandy areas and seem abundant enough on conservation lands to merit reclassification to threatened status. Both species still appear to have problems. Wireweed in particular is common mostly along roads, firebreaks, and other mechanically-disturbed sites. This appears to indicate that there have not been enough fires, or they have been too infrequent, and that the scrub vegetation is often more dense than it would have been before fires were suppressed. A further complication for *Polygonella myriophylla* is that almost nothing is known of its life history. In and of itself, this need not be a major concern—biologists have good data on the population ecology of relatively few plant species, many of them commercially important (such as some forest trees). But studies on other scrub species, such as a snakeroot (*Eryngium cuneifolium*), have consistently turned up surprises and information helpful to land managers; the Fish and Wildlife Service's recovery plan for these species emphasizes such studies. Still, in view of the Endangered Species Act's approach to conservation, which is to identify threats, then counter those threats through the recovery process, it is clear that these plants are much better off than they were when they were listed, and adjustments to their listing status may be justified.



Burning is a **MUST** for our precious scrub ecosystem. If you need assistance in finding a partner to assist you in getting fire accomplished on lands you manage, give Dawn Zattau a call at 904-232-2580, ext. 107. Contact information is available from the scrub workshop '99 transcript!

Your Photo (Or Drawing) Goes Here!



The editor is seeking unique scrub pictures to place in each newsletter at this location. Your photo could be anything scrub-related (e.g. general habitat shots, shots of flora or fauna, management activity, etc.). Please submit any photos and captions via email to dawn_zattau@fws.gov or mail a print, negative, or slide to Dawn Zattau, U.S. Fish and Wildlife Service, 6620 Southpoint Dr. S., Ste. 310, Jacksonville, FL 32216. I promise to return the original to you as soon as I have scanned the image!



Address Correction Requested

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